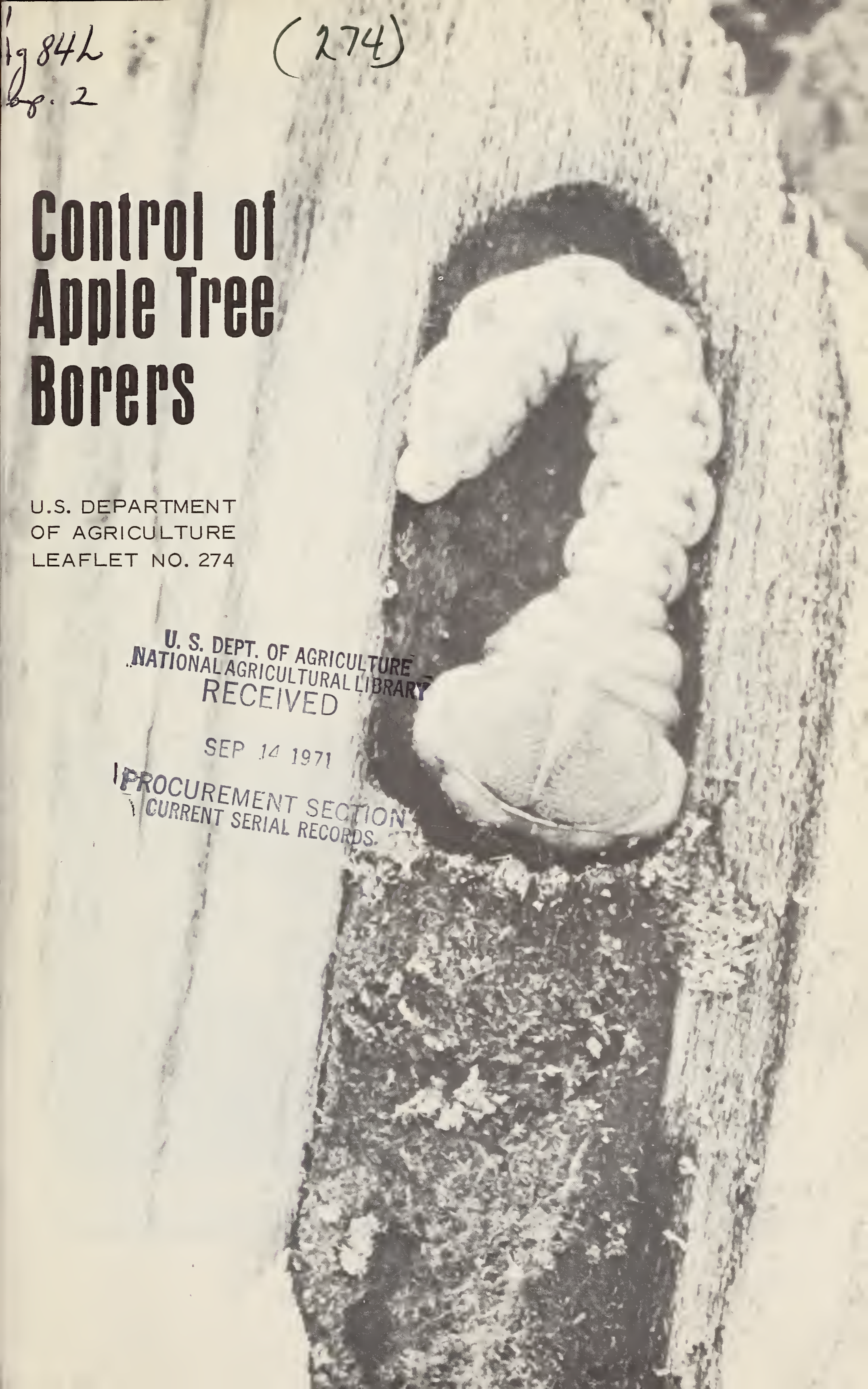
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

1g84L
cop. 2

(274)



Control of Apple Tree Borers

U.S. DEPARTMENT
OF AGRICULTURE
LEAFLET NO. 274

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
RECEIVED
SEP 14 1971
PROCUREMENT SECTION
CURRENT SERIAL RECORDS

CONTROL OF APPLE TREE BORERS

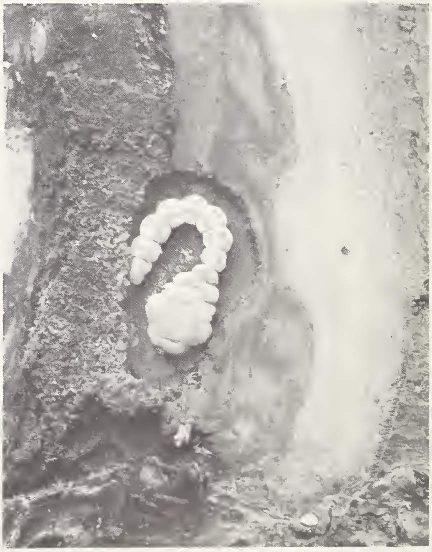
SEVERAL KINDS OF INSECTS bore into the wood of fruit trees in various parts of the United States. These borers are the larvae, or grubs, of beetles or moths. Their burrowing may weaken the tree, and even girdle it completely, causing it to die. The most important borers that attack apple trees are the flatheaded apple tree borer, the roundheaded apple tree borer, and the shot-hole borer.

The insecticidal control measures given in this bulletin should be used only on infested trees in commercial apple orchards. *They should not be used in home gardens.* For control in the home orchard, consult your county agricultural agent or State agricultural experiment station.

THE FLATHEADED APPLE TREE BORER

The flatheaded apple tree borer[1] (fig. 1) is probably the most common borer attacking apple trees. It occurs throughout most of the United States and in southern Canada. It generally attacks trees that have recently been transplanted, are retarded in growth, or have bark that has been damaged by tools or by disease, sun scald, or animals or other insects. Trees that are vigorous and have sound, healthy bark are rarely injured by this borer.

This insect injures trees only when it is in the larval stage. Soon after hatching the young larvae bore into the bark of the trunk or larger branches and feed between the bark and sapwood. In young trees they feed chiefly in the sapwood, and the wound is likely to be long and narrow, often encircling the tree and killing it. In older trees they feed mostly in the thick inner bark, and the wound is more or less circular in outline. A wound may be enlarged year after year by new broods of borers. Injured spots



BN-24115

Figure 1.—Flatheaded apple tree borer feeding in wood of apple tree.

---

[1] *Chrysobothris femorata* (Oliv.).

can often be detected by the darker color and slight depression of the bark.

Appearance and Development

The flatheaded apple tree borer is so called because just back of the head is a broad, flat enlargement which gives it a "flatheaded" appearance. It is a yellowish-white footless grub about 1 inch long when full grown (fig. 1). It is generally found curved in the shape of a horseshoe.

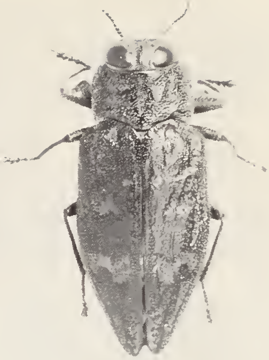
The newly hatched larvae usually enter the bark at the place where the eggs were deposited. If the tree is vigorous and full of sap, the borers may soon die or they may live a year or longer, but if the tree is already in a weakened condition or if the bark has been badly damaged, the larvae develop rapidly.

Late in the summer, when the borers are full grown, they burrow into the wood to a depth of 1 inch or more, and at the end of their tunnels construct chambers in which to pass the winter. The following spring they change first to pupae and then to adult beetles (fig. 2).

The beetles issue from the wood through the tunnels they made as larvae. They appear soon after the apple trees bloom and are active for several weeks, laying eggs for the next brood in cracks or openings in the bark.

On hot clear days the beetles may be found on the sunny side of the tree trunk and on the larger branches of the tree.

The beetles are about ½ inch long, dark brown in color, with indistinct spots and bands of gray. Beetles have a brassy sheen when seen under a certain light.



FR.I. 4826

Figure 2.—Adult flatheaded apple tree borer. (Enlarged.)

The back beneath the wings is a metallic greenish-blue, and the underparts of the body are bronze.

Control Methods

Because flatheaded borers rarely injure strong, healthy trees, an important means of controlling them is to use cultural methods that will keep the trees vigorous, such as proper cultivation, fertilizing, spraying, pruning, and watering. The use of insecticides to repel the beetles or to kill the larvae in their burrows has not given consistently good results in all areas, and is not recommended.

Wrapping the trunks of newly transplanted trees from the ground to the lower limbs will greatly reduce egg laying.

Newspaper, crepe paper of double thickness with asphalt between the layers, and burlap have proved satisfactory for wrapping. Wrap the trunks spirally or vertically and hold in place with a light cord. Apply the wrappings soon after apple trees bloom in the spring.

Do not leave dying trees and newly cut logs and prunings in or near the orchard from one season to another, because the beetles may fly from them to the orchard trees.

THE ROUNDHEADED APPLE TREE BORER

The roundheaded apple tree borer [2] is found in the eastern half of the United States and Canada and as far west as Texas and Nebraska. In the East, it is the most destructive borer that attacks apple trees, but it does not infest so many other kinds of trees as do the flatheaded borer and the shot-hole borer.

The feeding of the roundheaded borers greatly weakens the trees and kills many of them. Trees of all sizes are attacked but mostly those from 3 to 10 years old, especially if they have not been sprayed. Orchard trees near an abundant growth of wild trees in which borers are breeding are most seriously affected. As the borers feed, they make small holes in the bark, through which they throw out reddish sawdust-like castings. Infested trees may be detected from these castings. The adult beetles feed on the bark of twigs and on the midribs and stems of leaves, but they seldom cause any injury to the trees. They seem to like the moisture in the castings thrown out by the larvae.

Appearance and Development

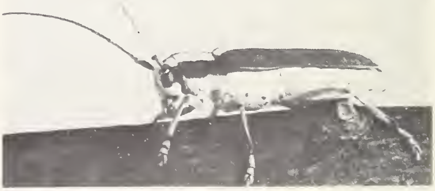
In the northern part of the infested region, the roundheaded borers usually complete their life cycle in 3 years, although some require only 2 and others 4 years. Farther south, most of them require only 2 years.

The adult beetle (fig. 3) is about ¾ inch long. It is light brown above, with two broad white bands joined in front, extending the full length of the back. The underpart of the body and the front of the head are white.

Late in the spring or early in the summer, the beetles emerge from the trees. All those in a given locality come out within 2 or 3 weeks. After they emerge, they go to the branches of the trees, where they spend most of their lives resting in the foliage. The females make short flights in search of trees in which to lay their eggs.

About 10 days after they emerge, the females begin egg laying and continue for 40 to 50 days. They insert the eggs in a slightly curved opening in the bark, usually just above the surface of the ground. In New York, egg laying extends from the last of June to late in August, and in West Virginia and Maryland from the last of May to the middle of July.

The larva, or borer (fig. 4), is a whitish footless grub, with brown



F.R.I. 3306

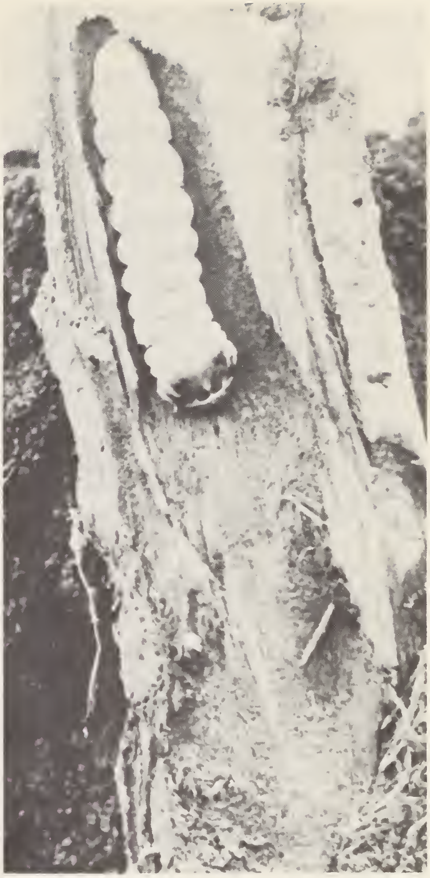
Figure 3.—Adult roundheaded apple tree borer. (Enlarged.)

---

[2] *Saperda candida* F.

head and black jaws. When full grown it is nearly 1½ inches long. Upon hatching, the young borers attack the inner bark, where they continue to feed until late in the season. During the first season they feed and grow rapidly. When several attack one tree they may completely girdle and kill it before winter. Their burrows at this time are broad, irregular galleries beneath the outer bark, near the point where the egg was laid.

The borers spend their first winter in the burrows near the ground. Early the next spring they resume feeding, attacking the solid wood almost exclusively and, in young trees, penetrating to the heart. During the second summer those that are to become adults the following year extend their burrows up the trunk, ½ inch or more beneath the bark. Borers that do not become adults until they are 3 or 4 years old remain, feeding in the wood near the ground until the third or fourth summer. Then they too work their way up the trunk in the manner just described. When ready to emerge, the beetle gnaws a circular hole through the bark.



BN–19471

Figure 4.—Roundheaded apple tree borer in young apple tree. (Enlarged.)

Control Methods

Roundheaded apple tree borers can be controlled by worming. Infestations can be reduced by removing all wild host trees nearby.

You can remove the borers from trees with a knife and a piece of wire with a hooked tip. This method is called worming. It is one of the oldest and, when thoroughly done, one of the best ways of destroying this insect after it has become established in the trees. To aid in locating the borers, first clear away the litter about the bases of the trees. You can usually cut out the younger borers with a knife, but take care not to cut away any more wood than is necessary. You can kill the older ones by probing with a wire. If you do the cutting carefully and remove the borer, the wound will usually heal without noticeable injury to the tree, although it is well to cover the wound with lead paint.

Worm the trees early in the fall—by September 1 in the latitude of West Virginia and Maryland, slightly earlier farther south, and later farther north. Examine them again the following spring, and remove any borers that may have been missed in the fall.

Keeping the trees healthy and vigorous by proper cultivation, fertilization, pest control, and watering will help the infested trees to overcome the effects of borer injury.

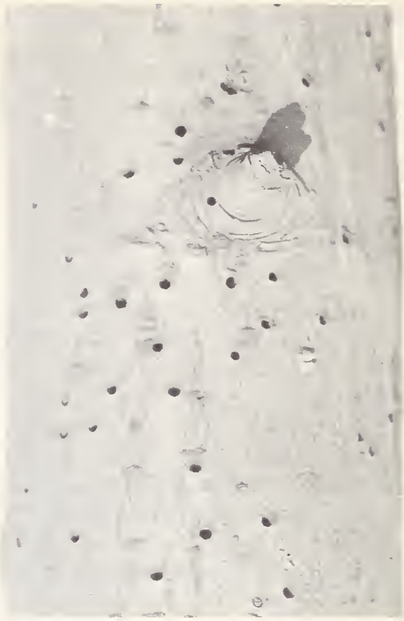
Be sure to examine nearby wild host trees, such as serviceberry, mountain-ash, wild crab, and thorn, and treat or destroy any that are infested.

THE SHOT-HOLE BORER

The shot-hole borer,[3] sometimes called the fruit-tree bark beetle, attacks most kinds of deciduous fruit trees. It is found in all States east of the Mississippi River and in many localities farther west, as well as in Canada. It prefers trees dying from neglect, lack of moisture, diseases, or injuries caused by animals or other insects. If very abundant the shot-hole borer may attack healthy trees.

Both the larvae and adult beetles burrow between the bark and the sapwood, forming centipede-like figures in the wood. In this way they destroy the vital part of the tree and may cause serious damage in a short time.

In entering and leaving the wood the beetles make conspicuous holes in the bark (fig. 5); hence the common name "shot-hole borer." Because these holes attract the attention of orchard owners, the death of trees is sometimes attributed to beetle injury, when it is usually due to some other causes.



F.R.I. 4628

Figure 5.—Exit holes of shot-hole borer in section of trunk of young apple tree.

Appearance and Development

The adult beetle is about 1/10 inch long, and dark brown or black (fig. 6). The beetles appear in the spring, from April to June according to the latitude. The female gnaws a hole about 1/20 inch in diameter through the bark. Then she makes a slightly larger burrow 1½ to 2 inches long about parallel with the grain of the wood, mining out small niches into which she deposits white eggs.

These eggs hatch into small footless larvae, or borers, white with reddish heads. The borers burrow and feed on the sapwood for 30 to 36 days. They are then

---

[3] *Scolytus rugulosus* (Ratz.).

1/10 inch long and full grown. After a short resting period, they transform to adult beetles and gnaw their way out through the bark.

A few days after they emerge, the young beetles begin to deposit eggs, and thus start a second brood of larvae, which will feed in the trees during the latter part of the season. In the northern half of the region where the shot-hole borer is found, the second-brood larvae spend the winter in the trees and become beetles early the following spring. Farther south, however, these larvae become adults before winter and deposit eggs from which a third brood of larvae hatches.

Control Methods

To control the shot-hole borer, destroy dying or injured trees in which it breeds. Remove infested branches and broken or weak ones that might become infested. Keep the trees vigorous by cultivating, fertilizing, and watering them, and by controlling insects and diseases that sap vitality.

You can prevent some egg laying by keeping the trunk and larger lower limbs thoroughly coated with whitewash. Three applications may be needed—one early in the spring, another about midsummer, and a third in the fall. If the mixture is thick, apply a single coat with a broom or brush. However, if you use a mixture thin enough for application with a spray pump, you will need to apply two coats. A handful of table salt added to each pail of whitewash will make it stick better. The whitewash will have no effect on insects already in the trees.

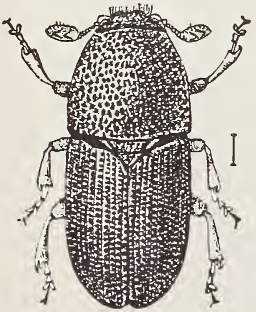

BN–24202

Figure 6.—Adult shot-hole borer. (Enlarged.)

Adult shot-hole borers (in commercial orchards) can be killed by spraying infested limbs—or entire trees—with parathion. To prepare a spray, mix 2 pounds of 15-percent parathion wettable powder with 100 gallons of water. (See "Precautions.")

Apply the spray when adult beetles are present in maximum numbers, but not too close to harvest. The interval that should be allowed between spraying and harvesting is stated on the insecticide label. Wet all infested limbs thoroughly with the spray.

PRECAUTIONS

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers out of the reach of children and animals and away from food and feed. If there is a poison symbol on the label, store under lock and key.

Apply pesticides so that they do not endanger humans, livestock, crops, fish, and wildlife. Do not apply pesticides under conditions favoring drift from the area to be treated, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat, drink, or smoke until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly. Launder the clothing before wearing it again.

Parathion is highly toxic and may be fatal if swallowed, inhaled, or absorbed through the skin. It should be applied only by a person who is thoroughly familiar with its hazards and who will assume full responsibility for proper use and comply with all precautions on the label. Parathion should not be applied to apples within 14 days of harvest. Do not use parathion on McIntosh or related varieties. Do not use parathion in small home plantings.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary landfill dump, or crush and bury them in a level isolated place, and where they will not contaminate water supplies.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations.

PROTECT

Use Pesticides Safely
FOLLOW THE LABEL
U.S. DEPARTMENT OF AGRICULTURE

Prepared by

Entomology Research Division
Agricultural Research Service

Washington, D.C. Revised March 1971

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 10 cents

☆ U.S. GOVERNMENT PRINTING OFFICE: 1970 0—386-774